

REMARKS

Claims 1-14 remain pending in the application. Claims 1-7 and 9-14 have been amended.

Claims 13 and 14 stand rejected under 35 U.S.C. 112, second paragraph, as being incomplete for emitting essential steps, amounting to a gap between the steps.

Applicants have now amended claim 13 (and 14) to correct the omitted steps. Applicants respectfully point out that the omitted steps were not the result of negligence, but rather the result of e-filing the present application using PASAT. PASAT is known to contain (software) bugs, wherein, on occasion, the presence of a colon induces the system to eliminate the word immediately following the colon. Regardless, Applicants have now made the necessary corrections.

Accordingly, Applicants believe that claims 13 and 14 are free of rejection under 35 U.S.C. 112, second paragraph, and respectfully request that the Examiner withdraw the rejection of the stated claims based thereon.

Claims 1-14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' admitted prior art (AAPA) in view of Sakakibara et al (U.S.P. No. 5,952,155) (hereinafter referred to Sakakibara)

Applicants respectfully traverse the above rejection for the following reasons:

(1) Sakakibara teaches a mask comprising a plate for blocking the electron beam, and micro rectangular regions forming the pattern on the plate. (col. 5, lines 12-13). The mask taught by Sakakibara is provided with micro-apertures for limiting the current (i.e., the electron beam) passing through the micro apertures, (col. 5, lines 20-22).

More specifically, Sakakibara recites in column 5, lines 20-24:

"Use of the mask having the micro apertures makes it possible to limit a current amount of the electron beam passing through the micro apertures when forming on the wafer the pattern corresponding to an arrangement of the micro rectangular regions including the micro apertures."

Alternatively, Sakakibara recites in column 5, lines 38-44:

"In order to achieve the above object according to the present invention, a method of exposing a wafer to an electron beam using a mask having a plurality of blocks each having at least one aperture is provided, where an electron beam passing through at least one aperture of a selected one of the blocks is directed to the wafer to form a pattern on the wafer."

Applicants contend that AAPA in combination with Sakakibara teaches that the patterns of micro-apertures are to be placed directly on the mask and not in the plate-like object (also referred to 'grid' 11a) having a plurality of ion ejection holes 30 of various sizes, which Applicants place on the ion source 12.

(2) The mask taught by Sakakibara forms the pattern on the plate. Thus, Sakakibara does not teach the structure taught by the Applicants. As previously stated, the mask 20 directs the ion-beam correctly to the alignment layer 26 by cutting off unnecessary ion beams. The plate-like object enables an alignment layer to be irradiated by a uniform density ion beam, with the mask enabling the liquid crystal alignment to align correctly. Sakakibara does not teach nor suggest a uniform ion beam density (as shown in Figure 2) which is achieved by way of the plate-like object having a plurality of ion ejection holes, and neither does he teach the function of a mask directing the ion-beam to the alignment layer.

(3) Sakakibara's exposure equipment (Figure 1) relies only on the mask-stage movement but does not teach the substrate movement, as shown in Figure 1(a).

In summary, AAPA in combination with Sakakibara fails to teach an ion source having a plate-like object with a plurality of ion ejection holes that creates a uniform intensity distribution,

generating a uniform orientation of liquid crystal molecules on the surface of the thin film. By placing the patterns of micro-apertures directly on the mask and not in the plate-like object in the ion source, AAPA in combination with Sakakibara teaches away from what Applicants deem to be their invention.


Thus, Applicants believe that they have overcome the rejection of the aforementioned claims under 35 U.S.C. 103(a), and respectfully request that the Examiner reconsider and withdraw the rejection of the stated claims based thereon.

In view of the foregoing amendments and arguments, Applicants contend that all the active claims are now in condition for allowance, and respectfully request that the Examiner enter the amended claims; that all the rejections and objections to this application be reconsidered and withdrawn; and that the Examiner pass all the pending claims to issue.

Should the Examiner have any suggestions pertinent to the present application, the Examiner is encouraged to contact Applicants' undersigned representative at the number shown below. No fee is believed to be due for this submission. If any fees are required, however, the Commissioner is hereby authorized to charge such fees to Deposit Account No. 09-0458.

Respectfully submitted,

NOBUO OKAZAKI ET AL.

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